

CLASSIFICATION TITLE Materials and Research Engineering Associate (Specialist)	OFFICE/BRANCH/SECTION DES/GS/OGDW	
WORKING TITLE Materials and Research Engineering Associate	POSITION NUMBER 559-315-3381-xxx	REVISION DATE 06/13/2025

As a valued member of the Caltrans team, you make it possible to improve lives and communities through transportation.

**GENERAL STATEMENT:**

Under the direction of a Senior Engineering Geologist, the Materials and Research Engineering Associate (MREA) conducts and supports comprehensive soil and foundation investigations for transportation projects. The MREA assists Geoprofessionals (GP) in the planning and scoping of subsurface investigations, including performing field reconnaissance and research for Site Investigation Plan (SIP) development. Responsibilities include overseeing or performing geotechnical fieldwork such as logging boreholes, assisting geologists with field mapping of geotechnical hazards, and ensuring quality data acquisition. The MREA evaluates and analyzes collected field and laboratory data, prepares draft reports and technical summaries, and assists in the installation and initial monitoring of complex geotechnical instrumentation. In this capacity, the MREA may also assist in specialized data gathering efforts, potentially including rock climbing and scaling operations for geotechnical assessment. The incumbent works either as part of a team or independently as necessary to conduct various field investigation tasks and reports findings to the GP or Senior Engineering Geologist. Extensive travel throughout the state may be required.

**CORE COMPETENCIES:**

As a Materials and Research Engineering Associate (Specialist), the incumbent is expected to become proficient in the following competencies as described below in order to successfully perform the essential functions of the job, while adhering to and promoting the Department's Mission, Vision, Values, Strategic Imperatives and Goals. Effective development of the identified Core Competencies fosters the advancement of the following Leadership Competencies: Change Commitment, Risk Appetite, Self-Development/Growth, Conflict Management, Relationship Building, Organizational Awareness, Communication, Strategic Perspective, and Results Driven.

- **Creativity and Innovation:** Thinks beyond the confines of traditional models to recognize opportunities, seek creative solutions and take intelligent risks. (Employee Excellence - Innovation)
- **Dealing with Ambiguity (Risk):** Can comfortably handle risk and uncertainty, as well as make decisions to act without having the total picture. (Safety - Innovation)
- **Reliability:** Ability to demonstrate dependability in meeting commitments, and providing a consistent work product. Takes responsibility for individual actions in order to meet deadline demands. (Employee Excellence - Integrity)
- **Conflict Management:** Recognizes differences in opinions and encourages open discussion. Uses appropriate interpersonal styles. Finds agreement on issues as appropriate. Deals effectively with others in conflict situation. (Equity - Integrity, Stewardship)
- **Teamwork/Partnership:** Develops, maintains, and strengthens partnerships with others inside or outside of the organization through effective communication and collaboration. (Employee Excellence - Integrity)
- **Customer Focus:** Considers, prioritizes, and takes action on the needs of both internal and external customers. (Climate Action - People First)
- **Communication:** Expresses oneself clearly in all forms of communication. Gives feedback and is receptive to feedback received. Knows that listening is essential. Keeps others in the Division and other functional units informed as appropriate. (Employee Excellence - Pride)
- **Planning and Results Oriented:** Organizes and executes work to meet organizational goals and objectives while meeting quality standards, following organizational processes, and demonstrating continuous commitment. (Employee Excellence - Integrity)
- **Thoroughness:** Ensures that work and information is complete and accurate. Ensures that assignment goals, objectives, and completion dates are met. Documents and reports on work progress. (Safety, Employee Excellence - Integrity)

**TYPICAL DUTIES:**

Percentage Essential (E)/Marginal (M) <sup>1</sup>	Job Description
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POSITION DUTY STATEMENT

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45%	E	Geotechnical Investigation Planning and Field Scoping: Assists Geoprofessionals (GPs) in scoping subsurface investigations, project planning, and workplan development. Conducts preliminary site reconnaissance to identify access routes, potential hazards, utility conflicts, and optimal locations for borings or testing; this includes "leg work" for Site Investigation Plan (SIP) development. Researches and compiles existing geological, geotechnical, and topographical data. Assists in preparing elements of drilling requests, field investigation work plans, and cost estimates. Coordinates with drill crews, laboratories, and other Caltrans units or external stakeholders to facilitate field activities. May direct Transportation Engineering Technicians (TETs) in specific data gathering tasks under the guidance of a GP.
30%	E	Geotechnical Data Evaluation and Reporting: Evaluates and analyzes geotechnical field and laboratory data, including soil and rock classifications, boring logs, in-situ test results (e.g., CPT, SPT), and laboratory test results. Uses specialized computer software for data processing, interpretation, and visualization (e.g., creating boring logs, geologic cross-sections, and graphical data presentations). Prepares draft technical reports, memoranda, and summaries of investigation findings for review by GPs. Maintains organized project files and contributes to geotechnical databases.
15%	E	Advanced Geotechnical Field Work and Instrumentation Support: Performs or oversees specialized geotechnical fieldwork, such as logging of soil and rock in exploratory boreholes and test pits, and assisting geologists with detailed field mapping of landslides, faults, and other geotechnical hazards. Assists in the installation, configuration, and initial monitoring of complex geotechnical instrumentation systems (e.g., automated piezometers, extensometers, shape array) ensuring proper functionality and data acquisition. Troubleshoots field equipment and coordinates repairs or calibrations.
10%	M	General Geotechnical Support and Development: Assists in maintaining and calibrating geotechnical field equipment and managing supplies. Participates in safety meetings and promotes safe working practices. May assist in the development or review of technical standards, specifications, or test methods related to geotechnical investigations. Performs other duties as required, including assisting with emergency response efforts or special projects. May assist with rock climbing and scaling operations to gather critical geotechnical data where access is limited.

<sup>1</sup>ESSENTIAL FUNCTIONS are the core duties of the position that cannot be reassigned.  
MARGINAL FUNCTIONS are the minor tasks of the position that can be assigned to others.

SUPERVISION OR GUIDANCE EXERCISED OVER OTHERS

The incumbent may act as a lead worker to facilitate the activities of Transportation Engineering Technicians (TETs) or other support staff as required by the needs of projects and to ensure accurate data collection in accordance with investigation plans, under the overall guidance of a Geoprofessional or supervisor. This is not a formal supervisory position.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS

Knowledge of, or ability to learn, the use of computers.

Knowledge of, or the ability to learn, fundamental principles of soil mechanics, rock mechanics, and engineering geology, geotechnical field investigation techniques, aspects of geotechnical instrumentation and test equipment; field instrumentation procedures; data acquisition devices; and in-situ testing.

Ability to independently apply sound judgment in field situations and to analyze factors capable of affecting field safety and data acquisition is required.

Ability to effectively communicate both verbally and in writing.

Ability to deal tactfully with individuals and groups from the Department, contractors, governmental agencies, and private consulting firms.

The incumbent must possess excellent field note taking skills and should be able to comprehend and analyze field situations and drilling issues to be able to recognize deficiencies as they arise and redirect efforts to make sure useful information is gathered.

The incumbent must recognize potential instrumentation problems and reliably assess their probable effects on the test program as it is being installed or monitored.

RESPONSIBILITY FOR DECISIONS AND CONSEQUENCES OF ERROR

This position requires effective and timely response in all aspects of geotechnical investigation and data evaluation. Errors in judgment, planning, data acquisition, or interpretation can result in inaccurate site characterization, leading to inadequate design recommendations, construction delays or difficulties, substandard performance of structures or earthwork, increased project costs, potential loss of Federal funds, and compromised public or employee safety.

POSITION DUTY STATEMENT

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PUBLIC AND INTERNAL CONTACTS

This position requires frequent and regular contact with personnel in the Department concerning geologic engineering matters related to in-house developed projects and projects developed by consultants. The incumbent will also have regular communication with consultants, contractors, manufacturers, vendors, local agencies, and other State personnel. The employee will routinely contact other Caltrans personnel, contractors and industry representatives concerning geotechnical fieldwork, rock climbing, drilling, testing and instrumentation. This contact will be verbal or written, as needed to perform assignments.

PHYSICAL, MENTAL, AND EMOTIONAL REQUIREMENTS

The incumbent will be required to work on field and construction sites, lift and transport heavy equipment and materials, work with exploratory equipment and collect field data. Landslide and undeveloped sites are often rugged and heavily vegetated. Field and construction site surfaces are often uneven, may have open excavations and may be located on steep slopes. Weather conditions can vary between icy, slippery and wet to hot and dry. The incumbent must have the ability to traverse these sites and withstand exposure to the adverse conditions for long periods of time. Must be able to carry and/or use field engineering equipment such as, but not limited to hand augers, surveying equipment, slope inclinometer equipment and core boxes. Other physical requirements of the job include the ability to lift and carry 50 pounds, reach overhead, push or pull, twist, climb, balance, bend, crouch, squat, crawl, and perform fine manipulation. Hearing and sight are both essential to job performance because the incumbent must be able to hear and see directions, traffic, equipment, and to other warnings or hazards thereby allowing the incumbent to perform duties safely. Corrected hearing is acceptable. Corrected sight must meet the CA DMV minimum visual acuity requirement. Night vision must be good for safety when working after dark. Incumbent may be required to work at night under artificial light. While in the office, employees may be required to sit for long periods of time using a keyboard and video display terminal. The incumbent will be responsible to ensure that assigned tasks are carried out in a professional, safe, and exacting manner and in accordance with existing policy, specifications, rules, work plans and guidelines. The incumbent must grasp the essence of new information and master new technical and engineering knowledge; must have the ability to multi-task, adapt to changes in priorities, and complete tasks or project meeting strict deadlines with, at times, short notice. The incumbent must possess the ability to develop and maintain cooperative working relationships, have a positive, productive, and friendly attitude, and maintain a willingness to learn while exposed to a variety of work environments.

WORK ENVIRONMENT

While at their base of operation, incumbent will work in a climate-controlled office under artificial lighting. As a statewide organization, DES adjusts to periods of fluctuating workload to successfully deliver projects. Incumbent will be required to travel and perform fieldwork and will be exposed to dirt, uneven surfaces, extreme temperatures, noise, vibration, and odor associated with fieldwork. May work around bulky/heavy materials and equipment used in the vicinity of inspection areas. May also be exposed to the motoring public. DES employees may be given temporary assignments on DES projects throughout the State as workload demands.

I have read, understand and can perform the duties listed above. (If you believe you may require reasonable accommodation, please discuss this with your hiring supervisor. If you are unsure whether you require reasonable accommodation, inform the hiring supervisor who will discuss your concerns with the Reasonable Accommodation Coordinator.)

I agree that by providing my electronic signature for this form, I agree to conduct business transactions by electronic means and that my electronic signature is the legal binding equivalent to my handwritten signature. I hereby agree that my electronic signature represents my execution or authentication of this form, and my intent to be bound by it.

EMPLOYEE (Print)

EMPLOYEE (Signature)	DATE
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I have discussed the duties with, and provided a copy of this duty statement to the employee named above.

SUPERVISOR (Print)

SUPERVISOR (Signature)	DATE
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